

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-6. (canceled)

7. (currently amended) ~~Measurement probe Device~~
according to claim [[6]] 18, ~~characterised in that wherein~~ the
selected measurement axes of the sensors of different layers
(1202, 1204) are at an angle other than zero angularly offset.

8. (currently amended) ~~Measurement probe Device~~
according to claim [[6]] 18, ~~characterised in that wherein~~ the
sensors of the same layer (1202, 1204) have their selected
measurement axes parallel.

9. (currently amended) ~~Measurement probe Device~~
according to claim [[1]] 13, ~~characterised in that wherein~~ all
the magnetoresistive or magnetoinductive sensors (1304, 1308) of
the probe are distributed on [[the]] a same layer (1302).

10. (currently amended) ~~Device for measuring a magnetic~~
~~field comprising at least one probe (100)~~ according to claim 1,
[[and]] further comprising:

a specific processing chain (28) which is specific
connected to each magnetoresistive sensor, each processing chain
processing the signal from the magnetoresistive sensor; and
means [(18)] for processing the signals from ~~the~~
~~various~~ each said processing chains chain.

11. (canceled)

12. (currently amended) Measurement probe Device
according to claim [(7)] 17, characterised in that wherein the
sensors of the same layer (1202, 1204) have their selected
measurement axes parallel.

13. (new) Device for measuring at least one component
of a current comprising:

at least one probe comprising a first and a second
magnetoresistive or magnetoinductive sensors which are adapted to
detect a first and respectively a second magnetic fields along a
first and respectively a second predetermined selected
measurement axes, the first and the second predetermined selected
measurement axes having a first and respectively a second
directions, the first and second sensors being rigidly connected
to each other in a position such that the first and second
measurement axes are at an angle other than zero, the probe
further comprising output terminals which are specific to each
sensor in order to provide a signal which is representative of

the magnetic field measured by each of the sensors along the selected measurement axis thereof;

a computing device for determining a derivative of the first magnetic field relative to the second direction and a derivative of the second magnetic field relative to the first direction, the computing device calculating a difference between the derivative of the first magnetic field relative to the second direction and the derivative of the second magnetic field relative to the first direction, said difference being representative of a component of the current.

14. (new) Device according to claim 13, further comprising a mechanism for displacing the probe along the second direction from a first position to a second position, the probe measuring the first magnetic field at the first and second positions, the computing device determining:

a distance between the first and second positions,
a difference between the first magnetic field at said first position and the first magnetic field at the second position,

a ratio between said difference and said distance, said ratio being the derivative of the first magnetic field relative to the second direction.

15. (new) Device according to claim 14, wherein the mechanism displaces the probe along the first direction between

two positions, the probe measuring the second magnetic field at the two positions, the computing device determining:

a distance between the two positions,

a difference between the second magnetic field at one of said two positions and the second magnetic field at another of said two positions,

a ratio between said difference and said distance, said ratio being the derivative of the second magnetic field relative to the first direction.

16. (new) Device according to claim 13, wherein the probe comprises a third and a fourth magnetoresistive or magnetoinductive sensors which are adapted to detect a third and respectively a fourth magnetic fields along a third and respectively a fourth predetermined selected measurement axes, the third and the fourth predetermined selected measurement axes being parallel to the first and respectively the second directions; the computing device calculating:

a difference between the first and the second magnetic fields,

a distance between the first and the third sensors,

a ratio between said difference and the distance between said first and third sensors, said ratio being the derivative of the first magnetic field relative to the second direction,

a difference between the second and the fourth magnetic fields,

a distance between the second and the fourth sensors,
a ratio between said difference and the distance between said second and fourth sensors, said ratio being the derivative of the second magnetic field relative to the first direction.

17. (new) Device according to claim 13, wherein the probe comprises a first semiconductor substrate, the first and the second sensors being formed in said first semiconductor substrate, the first and the second sensors having selected detection axes which are arranged perpendicularly relative to each other.

18. (new) Device according to claim 13, comprising two superimposed layers made of superconductive material, one of said superimposed layers comprising one part of the sensors, another of said superimposed layers comprising another part of the sensors.

19. (new) Device according to claim 16, wherein the first and the second sensors are arranged on a first integrated circuit, the third and the fourth sensors are arranged on a second integrated circuit, the second integrated circuit being arranged parallel with the first integrated circuit.